# 10.4 Even Answers

2) $V_0 = 490$ m/sec

4) $x = 32\sqrt{3} \approx 55.426$ feet away horizontally

6) $\approx 0.0987$ feet $\approx 1.18$ inches further

8) $3.136 \times 10^{-14}$ m or $3.136 \times 10^{-12}$ cm

14) $\sin 2\alpha = \sin[2(90-\alpha)]$

18) $\frac{1}{2}t = \frac{V_0 \sin\alpha}{2g}$ for half the time. Substitute into $y(t)$ to get $\frac{3(V_0 \sin\alpha)^2}{8g}$

# 10.5 Even Answers

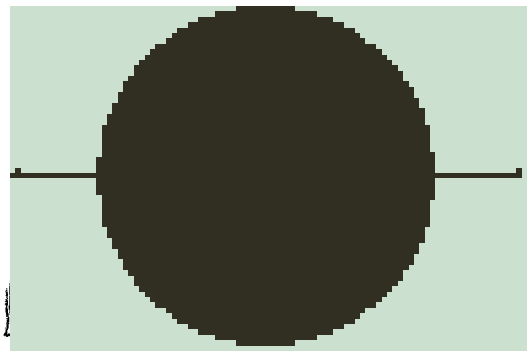
2) (a)→(f) (b)→(h) (c)→(g) (d)→(e)

4) a) $\left(\frac{3\sqrt{3}}{2}, -\frac{3}{2}\right)$ b) $(3,4)$ c) $(1,0)$ d) $(-\sqrt{3}, 3)$

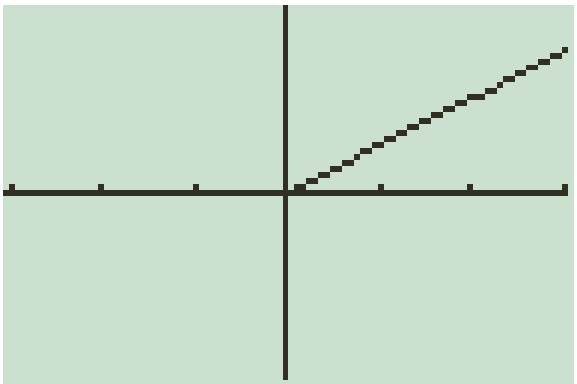
6) a) $\left(2, \frac{7\pi}{6}\right)$ or $\left(-2, \frac{\pi}{6}\right)$ b) $\left(5, \tan^{-1}\frac{4}{3}\right)$

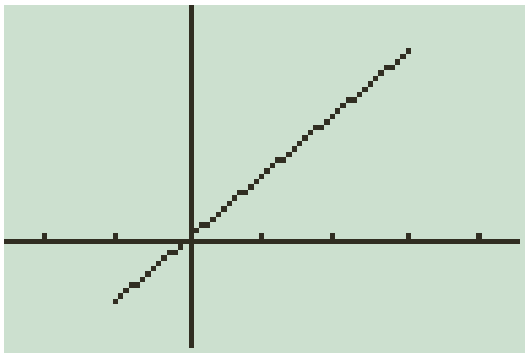
c) $\left(2, \frac{3\pi}{2}\right)$ or $\left(-2, \frac{\pi}{2}\right)$ d) $(2,0)$ or $(2, 2\pi)$

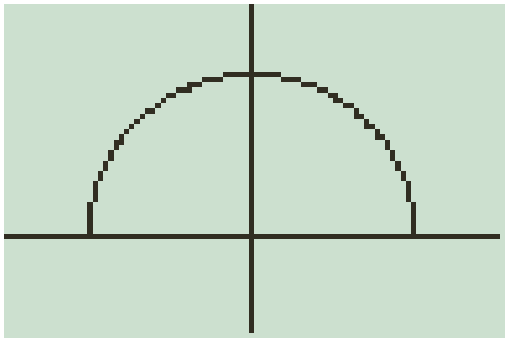
8)

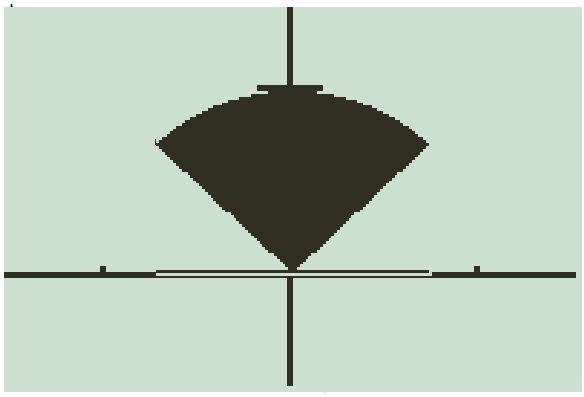


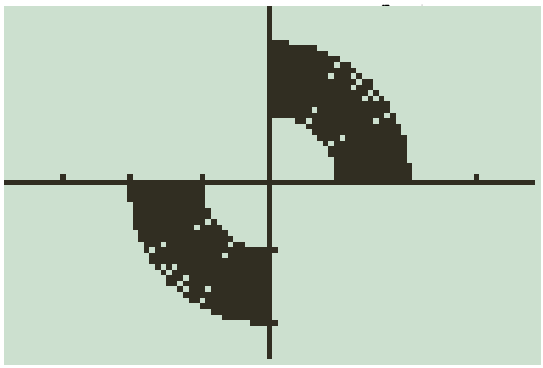
10)



12) 

14) 

16) 

18) 

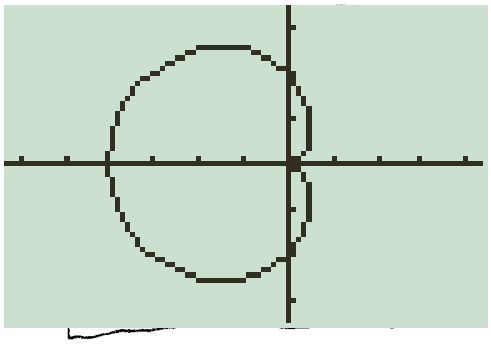
20) $x = 0$ 22) $x = -3$ 24) $x^2 + y^2 = 1$

26) $y = 2x + 5$ 28) $y^2 = x$ 38) $r = \csc\theta$

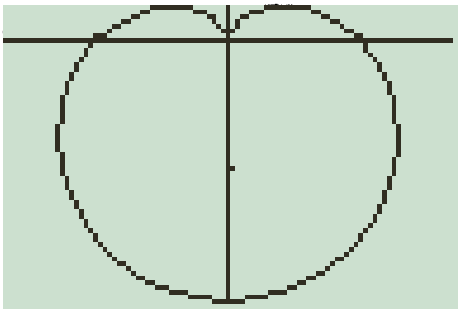
40) $r = \dfrac{3}{\cos\theta - \sin\theta}$ 42) $r = \pm\dfrac{1}{\sqrt{\cos^2\theta - \sin^2\theta}}$

44) $r = \pm\dfrac{2}{\sqrt{\sin 2\theta}}$ 46) $r = \pm\dfrac{1}{\sqrt{1 + \cos\theta\sin\theta}}$

48) $r = 3\cos\theta - \sin\theta \pm \sqrt{(3\cos\theta - \sin\theta)^2 - 6}$

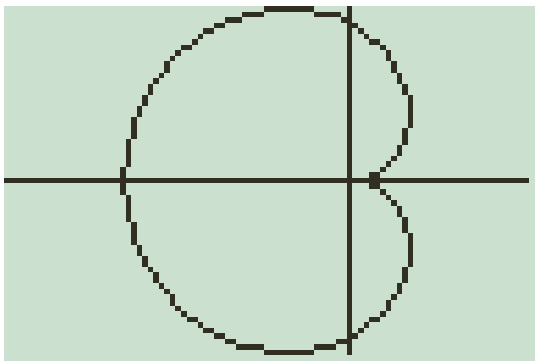
50) a) 

b) $2\pi$

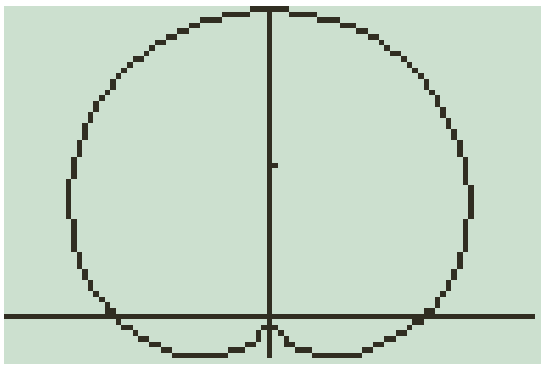
52) a) 

b) $2\pi$

54) a)



56) a)



# 10.6 Even Answers

2) $\theta = 0, \pi$ $\frac{dy}{dx}$ is undefined $\theta = \pm\frac{\pi}{2}$ $\frac{dy}{dx} = 0$

4) At $\theta = \frac{\pi}{3}, \pi$ $\frac{dy}{dx}$ = undefined At $\theta = \frac{2\pi}{3}$, $\frac{dy}{dx} = 0$ At $\theta = \frac{3\pi}{2}$ $\frac{dy}{dx} = 1$

6) $r = 0$ at $\theta = \frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6} \Rightarrow \frac{dy}{dx} = \frac{1}{\sqrt{3}}$, undefined, $-\frac{1}{\sqrt{3}}$

8) $r = 0$ at $\theta = 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi \Rightarrow \frac{dy}{dx} = 0$, undef, 0, undef, 0

32) $e^{\pi} - 1$ 34) $2a$ 36) $\approx 2.296$ 38) $2\pi$

40) $\pi\sqrt{5}\left(e^{\pi/2} + 1\right) \approx 40.818$ 42) $4a^2\pi^2$ 44) $\frac{2a}{\pi}$